

## Options for a better monitoring and control of operational buoys

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### Summary

Since 2012, ORTHONGEL has been monitoring the number of operational buoys used on Floating Objects (FOBs) by the French and Italian purse seine fleet operating in the Atlantic and Indian Oceans. In this document, we detail the methodology adopted with buoy providers for this monitoring as well as improvements in this methodology over 2012-2018. We underline the need for a transparent and harmonized control of the number of operational buoys used by purse seiners that would ensure compliance with existing buoy limitations. In particular, we address the issue of potential cycles of activation/deactivation that would lead to under-reporting of numbers of operational buoys. We propose minimum standards of operational buoy monitoring that would ensure that a given vessel does not circumvent buoy limitations with “ghost buoys”.

### Introduction

In 2012, due to raising concerns regarding the increasing of Fish Aggregating Devices (FADs) and their negative consequences (Dagorn et al. 2012, Fonteneau et al. 2013), ORTHONGEL and its member fishing companies implemented for the first time a voluntary limitation of the number of active tracking buoys used by French purse seiners in the Atlantic and Indian oceans (ORTHONGEL Decision No 11 of November 2011). In recent years, such limits have become mandatory for all tropical tuna purse seine fleets of the Atlantic, Indian and Pacific oceans (IOTC Res 15/08, ICCAT Rec 15-01, IATTC Res C-17-02, WCPFC CMM-2017-01).

In 2019, despite several years of implementation of buoy limits, clear definitions of the notion of “active” buoy, harmonized monitoring of the number of buoys as well as control by an independent and common body are still lacking. Though various monitoring methodologies have been developed (e.g Goñi et al. 2015, Maufroy et al. 2017), this situation leaves room for potential under-reporting of the number of buoys used on drifting Floating Objects (FOBs) through cycles of buoy activation/deactivation. The present document describes the methodology adopted by ORTHONGEL to monitor the number of buoys used by French purse seiners since 2012 and proposes minimum standards for data collection, reporting and control of the number of operational buoys.

### Material and Methods

#### Methodology used by ORTHONGEL to monitor buoys used at sea

Since 2012, “Buoy Monthly Declarations” (BMDs) transmitted by buoy providers have progressively been improved. The declaration frequency was increased from the quarter (2012-2015) to the month (2016) and then to the day (from 2017). Only buoys having emitted a position within 24 hours and drifting (speed greater than 0 and lesser than 6 knots) are counted. Sharing FADs among purse seiners is authorized as this could reduce the number of FADs at sea as well as FAD loss. The contribution of shared FADs to the number of active buoys is calculated as 1/number of sharing purse seiners.

Since 2016, monthly BMDs are checked using two indicators: (1) the maximal number of active buoys per vessel, so as to ensure that PS do not exceed the limit implemented by ICCAT and IOTC and (2) the average number of buoys active per day and per vessel for a given month, so as to ensure that PS do not exceed the limit implemented in the – more restrictive - French FAD management plan.

Finally, ORTHONGEL and its member fishing companies provide the positions of their buoys and their echosounder buoy data (respectively available from 2007 and 2010) to the French Institute for Research and Development. Though these data are not provided for compliance reasons but for scientific purposes, this ensures a full transparency of the French and associated purse seine fleet regarding its use of FOBs.

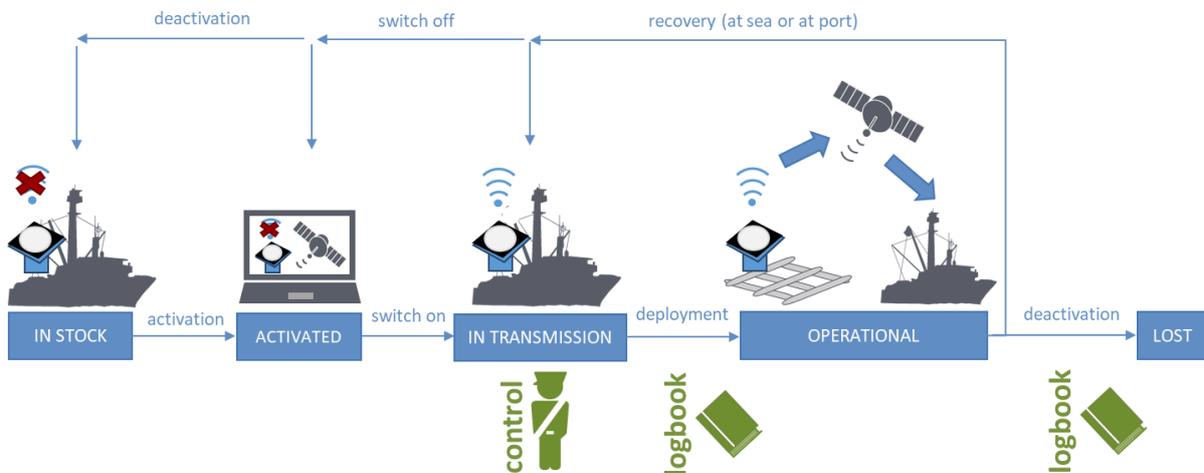
#### Improving the monitoring and the control of buoy use

Despite the progressive improvement of BMDs, the notion of “active buoy” remains unclear and an independent control of the number of buoys used at sea is still necessary. In 2019, improved definitions were elaborated with ORTHONGEL member fishing companies and buoy providers and a procedure of control was identified.

## Results and discussion

The misunderstanding of the lifecycle of instrumented buoys may lead to inappropriate management decisions which may in turn lead to the presence of “ghost buoys” at sea. In particular, the notion of “buoy activation” (registration of the buoy on the satellite system) is often confused with the transmission of the buoy (only possible when the buoy is registered on the satellite system and switched on) and does not take into account the status of the buoy (deployment at sea on a drifting FOB). As proposed in Grande et al. (2018), the use of the terminology “operational” should be preferred (Figure 1).

To ensure that purse seiners do not use cycles of activation/deactivation or other means to report less operational buoys than those actually at sea, the distance between the first position of the buoy and the position of the purse seiner and its support vessel could be verified. This procedure could be used (1) by buoy providers (who could cancel buoy activation in real time in case of non-conformity) and (2) for post hoc controls of the number of operational buoys used by an independent and common body.



**FIGURE 1. Proposed redefinition of buoy status and potential control of the number of operational buoys.** A given buoy should only be used at sea after registration, switching on and deployment. All other sequences of use should be considered as inappropriate as they may lead to “ghost buoys”.

## References

- Dagorn, L., Holland, K. N., Restrepo, V., and Moreno, G. 2012. Is it good or bad to fish with FADs? What are the real impacts of the use of drifting FADs on pelagic marine ecosystems? *Fish and Fisheries*.
- Fonteneau, A., Chassot, E., and Bodin N. 2013. Global spatio-temporal patterns in tropical tuna purse seine fisheries on drifting fish aggregating devices (DFADs): taking a historical perspective to inform current challenges. *Aquatic Living Resources* 26: 37–48.
- Grande, M., Santiago, J., Zudaire, I., Ruiz, J., Murua, J., Krug, I., Guéry, L., Gaertner, D., Justel, A., Maufroy, A., Moniz, I., Baez J-C., Ramos, L., Murua, H. 2018. The use of instrumented buoys to monitor the activity of the purse seine fleet fishing on FADs. IOTC-2018-WPTT20-23\_Rev1.
- ICCAT. 2015. ICCAT Recommendation 15-01 on a Multi-Annual Conservation and Management Program for Tropical Tunas.
- IOTC. 2015. IOTC Resolution 15/08 on Procedures on a fish aggregating devices (FADs) management plan, including a limitation on the number of FADs, more detailed specifications of catch reporting from FAD sets, and the development of improved FAD designs to reduce the incidence of entanglement of non-target species.